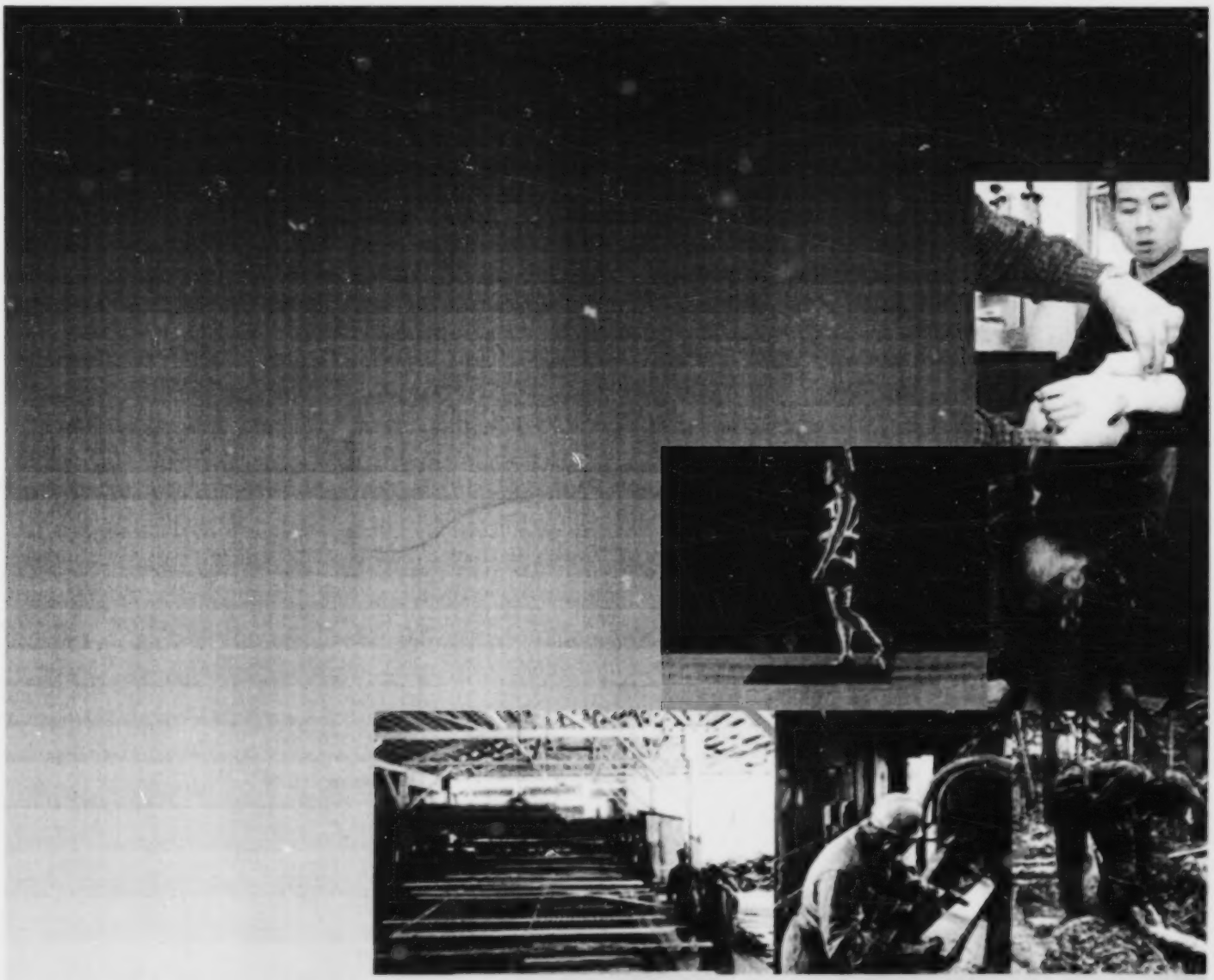
WCB Research Secretariat 2003 Report



WCB Research Secretariat

WorkSafe

WORKERS' COMPENSATION BOARD OF BC

Message from the chair of the Research Advisory Committee and the director of the Research Secretariat

Scientific research plays a vital role in making B.C. workplaces safer and healthier. When we look at today's complex health and safety challenges, such as musculoskeletal injuries, occupational disease, and high injury rates among young workers and industry sectors like health care and forestry, the need to generate new knowledge and translate it into effective, evidence-based solutions is clear.

This is well illustrated by the problem of work-related back strain injuries. Between 1998 and 2002, these injuries accounted for approximately 87,000 claims, over $660 million in compensation costs, and 3.9 million days lost from work. With funding from the research program, several projects are now underway to help prevent and treat these injuries, including the design of an affordable, portable ceiling lift for home support workers, the development of interventions to reduce back injuries in heavy industries, and an evaluation of a program to prevent chronic disability in low-back injured workers. Through these projects, researchers from a variety of disciplines — as well as a number of workplace supporters and partners — are responding to the need for rigorous and innovative approaches for reducing back strain injuries and their impact.

To date, the WCB research program has funded 41 projects that address key health and safety challenges, including 20 new projects funded in 2003 (see the descriptions beginning on page 9). Collectively, these projects will add significantly to the scientific evidence base for occupational health and safety in the province. This year we also awarded four research training awards to graduate students beginning careers in occupational health research — a first for the WCB!

We are also working to improve linkages between the WCB, the research community, and workplaces. In the coming year, we will be holding a research symposium to bring these groups together to share knowledge and exchange views on the future of occupational health and safety research in B.C. The Research Secretariat has also partnered with the Michael Smith Foundation for Health Research to develop occupational health research capacity in B.C., as well as the Association of Workers' Compensation Boards of Canada to create a national database of research projects, and the Centre for Health Services and Policy Research at the University of British Columbia to pilot a research partnership.

As we move into our fourth year, we look forward to seeing the results of several funded projects which are nearing completion. Watch for updates over the coming months! In the meantime, we invite you to read about some of the exciting research projects currently underway, which are profiled beginning on page 3.

Richard Gallagher
Chair
Research Advisory Committee

Anya Keefe
Director
Research Secretariat

contents

Table of contents

Message from the chair and director 2

Research in action 3

- Investigating the consequences of young worker injuries 3
- Preventing slips and falls 4
- New tools for delivering workplace injury management education 5
- New research addresses health and safety in the forestry sector 6

2003 operating grant projects 9

2003 development grant projects 13

2003 research training award recipients 16

About the Research Secretariat 18

- Research Advisory Committee 18
- Review process 19
- Research priorities 19

2004 funding opportunites 20

WCB Research Secretariat

Workers' Compensation Board of B.C.
PO Box 5350 Stn Terminal
Vancouver, BC V6B 5L5
Phone: 604 244-6300
Fax: 604 244-6295
E-mail: resquery@wcb.bc.ca
www.worksafebc.com/research/

105-01381/

Research in action

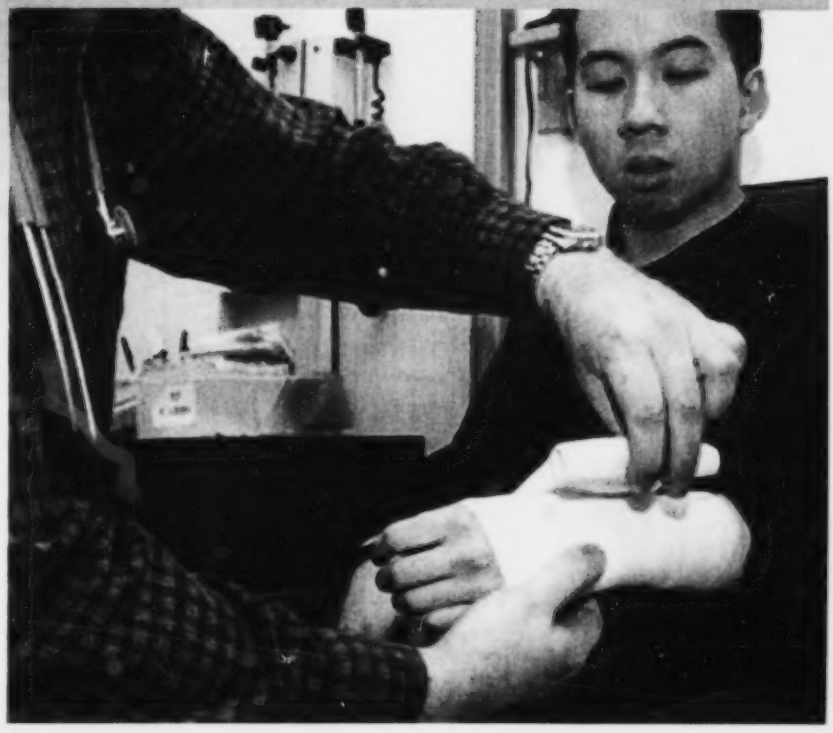
With three research competitions now complete, a variety of projects are underway and making significant progress towards their goal of advancing knowledge to improve occupational health and safety in B.C. Over the course of 2004, many of these projects are expected to wrap up and begin reporting final results.

Investigating the consequences of young worker injuries

Dr. Mieke Koehoorn

British Columbia has more than a quarter of a million young workers (aged 15 to 24) and they are at a greater risk than any other age group for being injured on the job. Although the latest statistics show that young worker injuries and fatalities are on the decline, last year alone an average of 170 young workers were injured on the job each work week.

To better understand the issue, Dr. Mieke Koehoorn, assistant professor at the University of British Columbia's Department of Health Care and Epidemiology, is conducting a study to examine the experience of young workers in B.C. and to evaluate the long-term health consequences of being injured on the job at a young age. Her interest in the topic stems partly from her concern for her nieces and nephews as they enter the workforce.


Dr. Mieke Koehoorn's research is exploring the long-term health consequences of being injured on the job at a young age.

"When teenagers like my young nieces and nephews head out with their friends, we usually ask what they'll be doing, where they'll be going, and who will be supervising them," she says. "But when those same teenagers start working, we focus on advice about working hard and doing what they're told. It's assumed that someone in the workplace will be looking out for them, and that he or she will come home safe."

Koehoorn's project, which received funding in the 2001-2002 research competition, is looking at health care outcomes among a group of 427,288 young people, and comparing those who have experienced an injury on the job with those who have not. The goal is to demonstrate the long-term health consequences of being injured on the job at a young age.

According to Koehoorn, the research is not without its challenges. "Young workers are a highly mobile group, and historical data are hard to find. Unfortunately, the statistics we do have show that young workers face a higher risk of injury than older workers and an injury early in life may result in a significant long-term increase in health service needs."

When completed at the end of 2004, the results of Koehoorn's study will be shared with a broad group of employers, educators, and other key stakeholders to raise awareness and encourage more focus on young worker safety. "I hope that by drawing attention to this important issue and increasing awareness around the lifetime consequences of young worker injuries, more resources and targeted prevention programs will be delivered to B.C.'s youth," she says.

105-01381/

Research in action

With three research competitions now complete, a variety of projects are underway and making significant progress towards their goal of advancing knowledge to improve occupational health and safety in B.C. Over the course of 2004, many of these projects are expected to wrap up and begin reporting final results.

Investigating the consequences of young worker injuries

British Columbia has more than a quarter of a million young workers (aged 15 to 24) and they are at a greater risk than any other age group for being injured on the job. Although the latest statistics show that young worker injuries and fatalities are on the decline, last year alone an average of 170 young workers were injured on the job each work week.

Dr. Mieke Koehoorn

To better understand the issue, Dr. Mieke Koehoorn, assistant professor at the University of British Columbia's Department of Health Care and Epidemiology, is conducting a study to examine the experience of young workers in B.C. and to evaluate the long-term health consequences of being injured on the job at a young age. Her interest in the topic stems partly from her concern for her nieces and nephews as they enter the workforce.

"When teenagers like my young nieces and nephews head out with their friends, we usually ask what they'll be doing, where they'll be going, and who will be supervising them," she says. "But when those same teenagers start working, we focus on advice about working hard and doing what they're told. It's assumed that someone in the workplace will be looking out for them, and that he or she will come home safe."

Koehoorn's project, which received funding in the 2001-2002 research competition, is looking at health care outcomes among a group of 427,288 young people, and comparing those who have experienced an injury on the job with those who have not. The goal is to demonstrate the long-term health consequences of being injured on the job at a young age.

Dr. Mieke Koehoorn's research is exploring the long-term health consequences of being injured on the job at a young age.

According to Koehoorn, the research is not without its challenges. "Young workers are a highly mobile group, and historical data are hard to find. Unfortunately, the statistics we do have show that young workers face a higher risk of injury than older workers and an injury early in life may result in a significant long-term increase in health service needs."

When completed at the end of 2004, the results of Koehoorn's study will be shared with a broad group of employers, educators, and other key stakeholders to raise awareness and encourage more focus on young worker safety. "I hope that by drawing attention to this important issue and increasing awareness around the lifetime consequences of young worker injuries, more resources and targeted prevention programs will be delivered to B.C.'s youth," she says.

Preventing slips and falls

Slip and fall accidents are one of the most common and costly threats to workplace health and safety. In 2002, falls from heights and on level surfaces accounted for more than 11,000 workers' compensation claims. In many cases, they resulted in serious injuries such as fractures, concussions, broken bones, and worse.

Previous research studies have looked at how to reduce the risk of slips and falls, but most of the studies used test subjects who knew they were about to slip. In the real world, most slips occur unexpectedly. This begs the question: Does knowing you are about to slip affect whether you fall? Dr. Gunter Siegmund, adjunct professor in the Department of Human Kinetics at the University of British Columbia, intends to find out.

"Think about how you change your gait when you walk onto a skating rink," he says. "Now imagine being blindfolded and not knowing there was ice in front of you. That's the difference between an expected slip and fall, and an unexpected one."

With funding from the 2001-2002 research competition, Siegmund and his colleagues are attempting to quantify the difference between expected and unexpected slips on low-friction surfaces found in many work environments. It's hoped the results will lead to improvements in testing devices used to measure shoe/floor friction, which in turn can be used to help determine appropriate shoe/floor combinations to prevent or minimize slip and fall accidents in the workplace.

To create a realistic slip and fall scenario in a lab environment, Siegmund is using a tribometer (a device that measures shoe and floor friction) to determine the likelihood of slipping. Subjects are outfitted with harnesses to prevent actual injury, electrodes to measure muscle activity, and accelerometers to measure gait dynamics. The floor surface is fitted with a device that measures ground reaction forces. Participants are tested by walking over a floor surface that is much more slippery than they expect. Their reactions are observed and then measured against the results of subsequent trials in which they expect the slippery surface.

Although testing is still in progress, preliminary results suggest that people change their gait or pre-tense their muscles if they think they're going to fall. In the second phase of the study, Siegmund will obtain data from other slip tests where the subjects were forewarned, then correct the findings for the observed expectation effects, and finally, use the results to help improve the accuracy of shoe/floor friction measuring devices. He plans to begin sharing results by spring 2004.

"Ultimately, I hope this research will lead to the prevention of slip and fall injuries," says Siegmund. "Right now, we're taking the first step toward that goal."

As part of his research project, Dr. Gunter Siegmund is conducting sophisticated slip and fall tests, which could eventually help prevent slip and fall accidents in the workplace.

Dr. Harry Karlinsky is testing new methods for delivering workplace injury management education to physicians, including innovative, Internet-based courses.

New tools for delivering workplace injury management education

Delivering continuing medical education to physicians involved in workplace injury management is an important part of the WCB's mandate. However, physicians in rural B.C. often have difficulty taking part in continuing medical education because traditional learning opportunities are available only in larger communities.

With this in mind, Dr. Harry Karlinsky, clinical professor and director of Continuing Professional Development at the University of British Columbia's Department of Psychiatry, is using funds from the 2000-2001 research competition to develop and evaluate new, more flexible options for delivering workplace injury management education to physicians.

"Typical face-to-face, hands-on medical education reaches only a limited number of people in B.C., most of whom are located in the Lower Mainland," says Karlinsky. "Fortunately, new technologies and techniques offer potential solutions for overcoming this problem."

Dr. Harry Karlinsky

Karlinsky and his research team have identified two topics — diagnosing and managing activity-related soft tissue disorders (ASTDs), and the physician's role in return-to-work planning for injured workers — as the focus of his study. The two topics have been developed into learning modules, which are being delivered to B.C. physicians through two conventional methods (small group outreach visits and traditional lectures) and two newer methods, which are better suited to distance education (video conferencing and online courses).

Participating physicians are asked to respond to a series of questions both before and after completing the learning modules to determine if there is a significant difference in the success of the different learning methodologies.

Although final results aren't expected until early 2004, Karlinsky expects to see a significant increase in physician knowledge on ASTD diagnosis and treatment, and return-to-work. Further, he hypothesizes that the increase in knowledge after video conferencing or online training will equal that of more traditional methods.

If this hypothesis proves to be true, the results will demonstrate the validity of distance medical education such as video conferencing and online learning, which should help remedy the educational gap between urban and rural doctors, and provide additional opportunities for all physicians to learn on an ongoing basis.

"In addition to improving the education of B.C.'s physicians, this research is creating a valuable liaison opportunity between the WCB and B.C. physicians," says Karlinsky. "Our findings will help the WCB deliver effective, accessible disability management educational programs to medical practitioners and other health care professionals throughout the province."

Preventing slips and falls

Slip and fall accidents are one of the most common and costly threats to workplace health and safety. In 2002, falls from heights and on level surfaces accounted for more than 11,000 workers' compensation claims. In many cases, they resulted in serious injuries such as fractures, concussions, broken bones, and worse.

Dr. Gunter Siegmund

Previous research studies have looked at how to reduce the risk of slips and falls, but most of the studies used test subjects who knew they were about to slip. In the real world, most slips occur unexpectedly. This begs the question: Does knowing you are about to slip affect whether you fall? Dr. Gunter Siegmund, adjunct professor in the Department of Human Kinetics at the University of British Columbia, intends to find out.

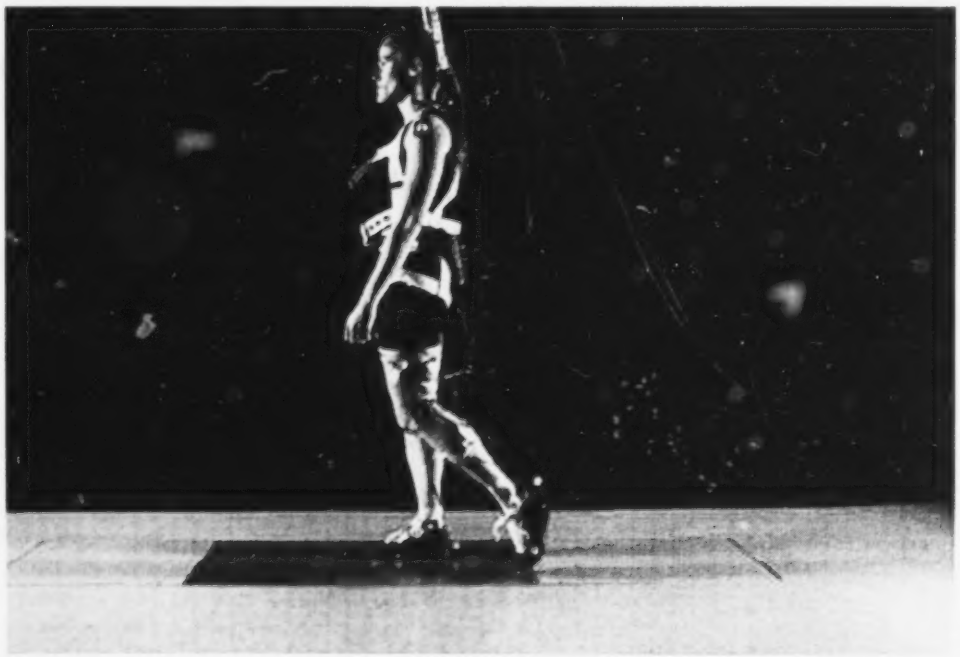
"Think about how you change your gait when you walk onto a skating rink," he says. "Now imagine being blindfolded and not knowing there was ice in front of you. That's the difference between an expected slip and fall, and an unexpected one."

With funding from the 2001-2002 research competition, Siegmund and his colleagues are attempting to quantify the difference between expected and unexpected slips on low-friction surfaces found in many work environments. It's hoped the results will lead to improvements in testing devices used to measure shoe/floor friction, which in turn can be used to help determine appropriate shoe/floor combinations to prevent or minimize slip and fall accidents in the workplace.

To create a realistic slip and fall scenario in a lab environment, Siegmund is using a tribometer (a device that measures shoe and floor friction) to determine the likelihood of slipping. Subjects are outfitted with harnesses to prevent actual injury, electrodes to measure muscle activity, and accelerometers to measure gait dynamics. The floor surface is fitted with a device that measures ground reaction forces. Participants are tested by walking over a floor surface that is much more slippery than they expect. Their reactions are observed and then measured against the results of subsequent trials in which they expect the slippery surface.

Although testing is still in progress, preliminary results suggest that people change their gait or pre-tense their muscles if they think they're going to fall. In the second phase of the study, Siegmund will obtain data from other slip tests where the subjects were forewarned, then correct the findings for the observed expectation effects, and finally, use the results to help improve the accuracy of shoe/floor friction measuring devices. He plans to begin sharing results by spring 2004.

"Ultimately, I hope this research will lead to the prevention of slip and fall injuries," says Siegmund. "Right now, we're taking the first step toward that goal."



As part of his research project, Dr. Gunter Siegmund is conducting sophisticated slip and fall tests, which could eventually help prevent slip and fall accidents in the workplace.

New tools for delivering workplace injury management education

Delivering continuing medical education to physicians involved in workplace injury management is an important part of the WCB's mandate. However, physicians in rural B.C. often have difficulty taking part in continuing medical education because traditional learning opportunities are available only in larger communities.

With this in mind, Dr. Harry Karlinsky, clinical professor and director of Continuing Professional Development at the University of British Columbia's Department of Psychiatry, is using funds from the 2000-2001 research competition to develop and evaluate new, more flexible options for delivering workplace injury management education to physicians.

"Typical face-to-face, hands-on medical education reaches only a limited number of people in B.C., most of whom are located in the Lower Mainland," says Karlinsky. "Fortunately, new technologies and techniques offer potential solutions for overcoming this problem."

Dr. Harry Karlinsky

Karlinsky and his research team have identified two topics — diagnosing and managing activity-related soft tissue disorders (ASTDs), and the physician's role in return-to-work planning for injured workers — as the focus of his study. The two topics have been developed into learning modules, which are being delivered to B.C. physicians through two conventional methods (small group outreach visits and traditional lectures) and two newer methods, which are better suited to distance education (video conferencing and online courses).

Participating physicians are asked to respond to a series of questions both before and after completing the learning modules to determine if there is a significant difference in the success of the different learning methodologies.

Although final results aren't expected until early 2004, Karlinsky expects to see a significant increase in physician knowledge on ASTD diagnosis and treatment, and return-to-work. Further, he hypothesizes that the increase in knowledge after video conferencing or online training will equal that of more traditional methods.

If this hypothesis proves to be true, the results will demonstrate the validity of distance medical education such as video conferencing and online learning, which should help remedy the educational gap between urban and rural doctors, and provide additional opportunities for all physicians to learn on an ongoing basis.

"In addition to improving the education of B.C.'s physicians, this research is creating a valuable liaison opportunity between the WCB and B.C. physicians," says Karlinsky. "Our findings will help the WCB deliver effective, accessible disability management educational programs to medical practitioners and other health care professionals throughout the province."

New research addresses health and safety in the forestry sector

Forestry is one of B.C.'s leading industries, employing an estimated 90,000 people directly and serving as the main income source for many communities in the province. Unfortunately, it is also one of the highest-risk sectors for workplace injury, disease, and death.

From 1997 to 2001 there were more than 13,500 workers' compensation claims in forestry, resulting in more than 900,000 days lost from work and tragically, an average of 24 fatalities each year.

A number of provincial initiatives are underway to help us better understand, mitigate, and prevent the risks associated with forestry work — including several studies that have received funding from the WCB. Researchers are approaching health and safety in this sector from several different angles. For example, one of this year's new development grant projects is laying the foundation for evaluating hearing conservation programs in forestry-related industries (see page 15), while another project is examining the health impacts of a tropical fungus which began to appear on trees on Vancouver Island in 1999 (see page 15). The following three projects, all being conducted by University of British Columbia researchers, are also addressing health and safety issues in the forestry sector.

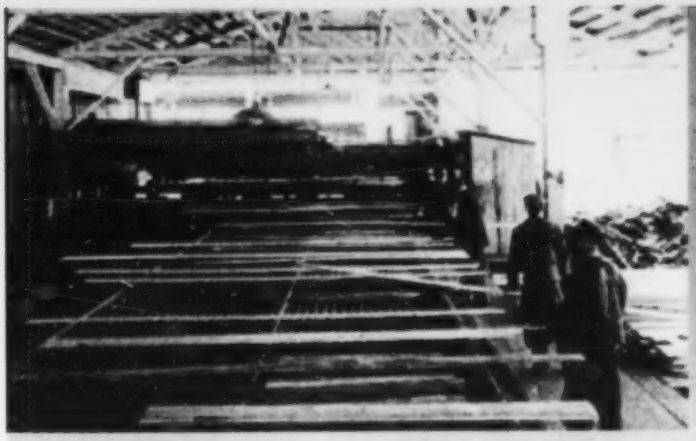
Exploring the link between fungicides and cancer

Between 1950 and 1990, approximately 100,000 B.C. sawmill workers were exposed to pentachlorophenol (PCP) and tetrachlorophenol (TCP), fungicides used to treat lumber.

Earlier studies suggested that workers exposed to PCP and TCP over long periods of time had an increased risk of non-Hodgkin's lymphoma, soft-tissue sarcoma, and other types of cancer. The results were considered inconclusive due to limited epidemiological data, but the use of these fungicides was largely discontinued except in some specialized functions.

Dr. Paul Demers

Dr. Paul Demers, associate professor of the School of Occupational and Environmental Hygiene and the Department of Health Care and Epidemiology, is picking up where the earlier research left off by looking at 26,000 workers from 14 B.C. sawmills who have been exposed to PCP and/or TCP. By tracking their health histories, he is hoping to determine more conclusively whether exposure to the fungicides is associated with an increased risk of cancer. This will be one of the most powerful studies conducted



Between 1950 and 1990, approximately 100,000 B.C. sawmill workers were exposed to fungicides that may increase the risk of certain types of cancer.

on the subject to date and may provide more definitive evidence than previous studies. If evidence of an increased risk emerges, it will allow enhanced primary prevention of future cancers and secondary prevention of mortality or morbidity among workers who have already been exposed.

"The results will be beneficial whether or not an association between chlorophenols and cancer is found. If a strong association is found, health care practitioners will be better equipped to provide for the needs of the exposed workers. If no link is found, then the research will allay the fears of thousands of people who know they were exposed to fungicides and are concerned about the health effects."

The research team plans to produce a web site and a brochure to share final results with stakeholders in forestry and related industries sometime in 2004.

Mitigating the impact of western red cedar asthma

Many people think of asthma as a disease that develops during childhood, but adults can also become asthmatic when they breathe in substances that cause their airways to become hypersensitive.

In the early 1970s, landmark research by Dr. Moira Chan-Yeung revealed that exposure to western red cedar dust could cause asthma. Today, western red cedar (WRC) asthma is recognized as the most prevalent form of occupational asthma in B.C. and it has far-reaching effects on workers' health and ability to work.

Dr. Helen Ward, associate professor in the Respiratory Division of the Department of Medicine, is conducting a follow-up study of B.C. patients previously diagnosed with WRC asthma. She is looking at the long-term consequences, including respiratory symptoms, overall health, employment characteristics, and quality of life.

At present, there is limited information about the long-term health and occupational outcomes of those workers who were first diagnosed back in the 1970s. But from what is known, it appears that the majority of patients with occupational asthma do not recover completely, even after years of being away from exposure. Also, continued exposure to the causative agent is generally associated with worsening of the asthma.

Dr. Helen Ward

The implications of the study could be enormous for B.C.'s forestry sector. Western red cedar accounts for approximately 25 percent of our mixed forests — meaning that thousands of B.C. forestry workers are continually exposed to western red cedar dust on the job. Ward's research, which is scheduled to conclude in 2005, is expected to help in the development of preventive and protective measures for those already diagnosed with WRC asthma and those who have not yet developed the illness.

"This study will also look at optimal care and disease management options within the context of the overall work environment," says Ward. "Our goal is to reduce the impact of western red cedar asthma on forestry workers, and to reduce costs to the industry and our health care system."

Each year, thousands of B.C. forestry workers are exposed to western red cedar dust, which has been shown to cause asthma in certain cases.

New research addresses health and safety in the forestry sector

Forestry is one of B.C.'s leading industries, employing an estimated 90,000 people directly and serving as the main income source for many communities in the province. Unfortunately, it is also one of the highest-risk sectors for workplace injury, disease, and death.

From 1997 to 2001 there were more than 13,500 workers' compensation claims in forestry, resulting in more than 900,000 days lost from work and tragically, an average of 24 fatalities each year.

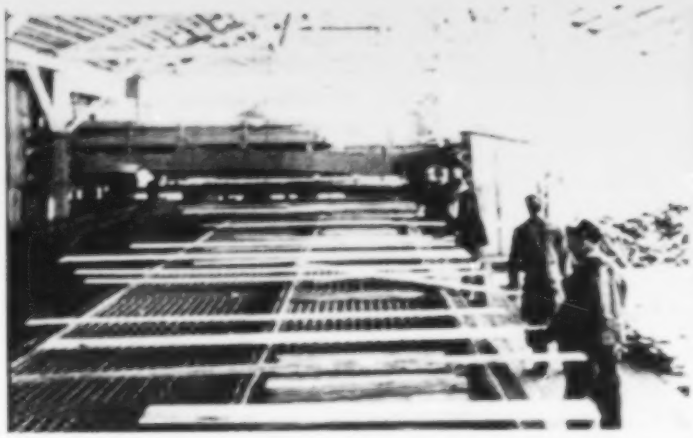
A number of provincial initiatives are underway to help us better understand, mitigate, and prevent the risks associated with forestry work — including several studies that have received funding from the WCB. Researchers are approaching health and safety in this sector from several different angles. For example, one of this year's new development grant projects is laying the foundation for evaluating hearing conservation programs in forestry-related industries (see page 15), while another project is examining the health impacts of a tropical fungus which began to appear on trees on Vancouver Island in 1999 (see page 15). The following three projects, all being conducted by University of British Columbia researchers, are also addressing health and safety issues in the forestry sector.

Exploring the link between fungicides and cancer

Between 1950 and 1990, approximately 100,000 B.C. sawmill workers were exposed to pentachlorophenol (PCP) and tetrachlorophenol (TCP), fungicides used to treat lumber.

Earlier studies suggested that workers exposed to PCP and TCP over long periods of time had an increased risk of non-Hodgkin's lymphoma, soft-tissue sarcoma, and other types of cancer. The results were considered inconclusive due to limited epidemiological data, but the use of these fungicides was largely discontinued except in some specialized functions.

Dr. Paul Demers, associate professor of the School of Occupational and Environmental Hygiene and the Department of Health Care and Epidemiology, is picking up where the earlier research left off by looking at 26,000 workers from 14 B.C. sawmills who have been exposed to PCP and/or TCP. By tracking their health histories, he is hoping to determine more conclusively whether exposure to the fungicides is associated with an increased risk of cancer. This will be one of the most powerful studies conducted



on the subject to date and may provide more definitive evidence than previous studies. If evidence of an increased risk emerges, it will allow enhanced primary prevention of future cancers and secondary prevention of mortality or morbidity among workers who have already been exposed.

"The results will be beneficial whether or not an association between chlorophenols and cancer is found. If a strong association is found, health care practitioners will be better equipped to provide for the needs of the exposed workers. If no link is found, then the research will allay the fears of thousands of people who know they were exposed to fungicides and are concerned about the health effects."

The research team plans to produce a web site and a brochure to share final results with stakeholders in forestry and related industries sometime in 2004.

Mitigating the impact of western red cedar asthma

Many people think of asthma as a disease that develops during childhood, but adults can also become asthmatic when they breathe in substances that cause their airways to become hypersensitive.

In the early 1970s, landmark research by Dr. Moira Chan-Yeung revealed that exposure to western red cedar dust could cause asthma. Today, western red cedar (WRC) asthma is recognized as the most prevalent form of occupational asthma in B.C. and it has far-reaching effects on workers' health and ability to work.

Dr. Helen Ward, associate professor in the Respiratory Division of the Department of Medicine, is conducting a follow-up study of B.C. patients previously diagnosed with WRC asthma. She is looking at the long-term consequences, including respiratory symptoms, overall health, employment characteristics, and quality of life.

At present, there is limited information about the long-term health and occupational outcomes of those workers who were first diagnosed back in the 1970s. But from what is known, it appears that the majority of patients with occupational asthma do not recover completely, even after years of being away from exposure. Also, continued exposure to the causative agent is generally associated with worsening of the asthma.

Dr. Helen Ward

The implications of the study could be enormous for B.C.'s forestry sector. Western red cedar accounts for approximately 25 percent of our mixed forests — meaning that thousands of B.C. forestry workers are continually exposed to western red cedar dust on the job. Ward's research, which is scheduled to conclude in 2005, is expected to help in the development of preventive and protective measures for those already diagnosed with WRC asthma and those who have not yet developed the illness.

"This study will also look at optimal care and disease management options within the context of the overall work environment," says Ward. "Our goal is to reduce the impact of western red cedar asthma on forestry workers, and to reduce costs to the industry and our health care system."

Each year, thousands of B.C. forestry workers are exposed to western red cedar dust, which has been shown to cause asthma in certain cases.

Preventing back injuries in forestry and other heavy industries

WCB statistics show forestry to be one of several industries with a high incidence of back injuries. Between 1998, and 2002, there were approximately 87,000 back strain injury claims accepted by the WCB, and of those claims, about 6,300 came from workers in forestry, sawmills, and other wood processing plants.

To find ways to reduce the frequency and impact of these injuries, a multi-year study has been initiated by Dr. Kay Teschke and Dr. Mieke Koehoorn, faculty members in the Department of Health Care and Epidemiology and the School of Occupational and Environmental Hygiene.

The first phase of the three-part study, designed with input from industry stakeholders, will identify risk factors for back injuries in forestry, wood and paper products, construction, transportation, and warehousing. Using data from the B.C. Linked Health Database (an extensive data resource for applied health services and population health research), Teschke and Koehoorn will identify workers who have had back injuries of various types and examine how often they visit doctors and other healthcare professionals, how often they are prescribed medications for their injuries, and how often they are admitted to the hospital. They will also determine how many workers in B.C. have back injuries at any point in time and how many workers who have never had back problems develop them each year.

For a group of 150 workers, the team will also measure their exposure to risk factors suspected of causing back injuries, such as awkward postures, lifting, pushing and pulling heavy weights, and whole-body vibration.

As part of the study, Teschke and Koehoorn are introducing new methodologies to determine the onset and duration of back injuries, and to assess exposure to physical risk factors. For example, they're using gyroscopes to track movement and posture in research subjects. The project also uses a multidisciplinary research model, which allows researchers from different research fields — health, policy, and engineering — to work together to determine the nature of the problem, design solutions, and help implement change.

Workers in the forestry sector and other heavy industries suffer a high incidence of back strain injuries.

This phase of the project, expected to be completed in 2005, will lay the groundwork for future research to design interventions in heavy industry and to rigorously evaluate their effectiveness for preventing back injuries.

Preventing back injuries in forestry and other heavy industries

WCB statistics show forestry to be one of several industries with a high incidence of back injuries. Between 1998, and 2002, there were approximately 87,000 back strain injury claims accepted by the WCB, and of those claims, about 6,300 came from workers in forestry, sawmills, and other wood processing plants.

To find ways to reduce the frequency and impact of these injuries, a multi-year study has been initiated by Dr. Kay Teschke and Dr. Mieke Koehoorn, faculty members in the Department of Health Care and Epidemiology and the School of Occupational and Environmental Hygiene.

The first phase of the three-part study, designed with input from industry stakeholders, will identify risk factors for back injuries in forestry, wood and paper products, construction, transportation, and warehousing. Using data from the B.C. Linked Health Database (an extensive data resource for applied health services and population health research), Teschke and Koehoorn will identify workers who have had back injuries of various types and examine how often they visit doctors and other healthcare professionals, how often they are prescribed medications for their injuries, and how often they are admitted to the hospital. They will also determine how many workers in B.C. have back injuries at any point in time and how many workers who have never had back problems develop them each year.

For a group of 150 workers, the team will also measure their exposure to risk factors suspected of causing back injuries, such as awkward postures, lifting, pushing and pulling heavy weights, and whole-body vibration.

As part of the study, Teschke and Koehoorn are introducing new methodologies to determine the onset and duration of back injuries, and to assess exposure to physical risk factors. For example, they're using gyroscopes to track movement and posture in research subjects. The project also uses a multidisciplinary research model, which allows researchers from different research fields — health, policy, and engineering — to work together to determine the nature of the problem, design solutions, and help implement change.

Workers in the forestry sector and other heavy industries suffer a high incidence of back strain injuries.

This phase of the project, expected to be completed in 2005, will lay the groundwork for future research to design interventions in heavy industry and to rigorously evaluate their effectiveness for preventing back injuries.

2003 operating grant projects

In 2003, the WCB awarded more than $1.36 million in operating grant funding to seven research projects. Combined with the two previous research competitions, this brings the total number of projects that have received operating grant funding to 28.

A prospective study of the effectiveness of early intervention with low-back injured workers who are at risk for work disability

Principal investigator:
Dr. Izabela Schultz, University of British Columbia

Purpose:
To examine the effectiveness of a proactive enhanced model of WCB service delivery to low-back injured workers who are at risk of developing a chronic disability.

Method:
A randomized clinical trial will be conducted to compare treatment outcomes for low-back injured workers receiving early intervention (enhanced model of care) versus those receiving the usual standard of care. The early intervention will focus on building a working alliance between injured workers, their family physicians, and employers in the return-to-work process. The intervention will be considered successful if workers return to work and have a shorter duration of work disability.

Importance:
While only about 10 percent of low-back injured workers develop chronic disability, these cases result in the majority of health care, rehabilitation, and wage-loss costs, as well as human suffering and lost productivity. The results of this study will assist clinicians and policy makers to prevent disability in low-back injured workers.

Do pain-related fear, catastrophizing, depression, and negative affectivity predict pain-related disability and treatment outcomes?

Principal investigator:
Dr. Kenneth Craig, University of British Columbia

Purpose:
To examine whether depression and/or pain-related fears (e.g., fear of pain, movement, and/or re-injury) can predict rehabilitation and return-to-work outcomes for workers with soft-tissue injuries, and whether those psychosocial variables are improved by participation in a standard occupational rehabilitation program.

Method:
The researchers will collect demographic information and data on depression, pain-related fear, avoidance, and catastrophizing from 200 workers with soft-tissue injuries referred to an occupational rehabilitation program. This information will be collected at the referral stage, at discharge, and three months later. Data analysis will determine the predictive power of each of the variables in determining rehabilitation outcomes after soft-tissue injury, whether individuals experience positive changes in the four variables, and whether such changes are associated with better treatment outcomes.

Importance:
Identifying the variables that predict chronic disability will contribute to improving treatment outcomes and the allocation of rehabilitation resources for injured workers.

Ergonomic health promotion for B.C. dental offices

Principal investigator:
Dr. Lance Rucker, University of British Columbia

Purpose:
To develop and evaluate ergonomic health promotion materials and voluntary guidelines aimed at reducing musculoskeletal injuries in dental offices.

Method:
The research team will design user-friendly ergonomic information and health promotion materials for dental offices. The materials will be based on a previous WCB-funded study that evaluated ergonomic practices in dentistry.

After piloting and refining the materials, they will be distributed to 100 dental offices in B.C. The offices will be surveyed at the time of distribution and four months later to evaluate changes in dental professionals' awareness of ergonomic issues and the implementation of ergonomic changes that would reduce the risk of musculoskeletal injury.

Importance:
A previous survey of the B.C. dental profession found that musculoskeletal pain and discomfort could be minimized with ergonomic interventions. Increased awareness and use of proper ergonomic practices among dental professionals should reduce musculoskeletal injuries and improve return-to-work outcomes for injured dental workers.

Back injuries in heavy industries: forestry, wood and paper products, construction, transportation, and warehousing

Principal investigators:
Dr. Kay Teschke and Dr. Mieke Koehoorn, University of British Columbia

Purpose:
To examine the causes of back injuries in five "at risk" heavy industries and test ways to reduce them.

Method:
The research team will examine how often B.C. workers with back injuries visit doctors and other healthcare professionals, how often they are prescribed medications for their injuries, and how often they are admitted to hospital. The team will also determine how many workers in B.C. have serious back injuries at any point in time and, on average, how many workers who have never had back problems develop them each year.

For 150 workers, the research team will also measure exposure to risk factors suspected of causing back injuries: awkward postures, lifting, pushing and pulling heavy weights, and whole-body vibration.

Importance:
Back strain injuries account for one quarter of all WCB claims — with more than 25 percent of those claims coming from workers in forestry, wood and paper products, construction, transportation, and warehousing. This phase of the study will lay the groundwork for designing and rigorously evaluating interventions to prevent back injuries in these five industries.

Development of a carcinogen surveillance program for British Columbia

Principal investigator:
Dr. Paul Demers, University of British Columbia

Purpose:
To develop a database of occupational carcinogens in B.C. and to estimate the number of workers exposed in B.C. industries.

Method:
The researchers will utilize a system developed in Finland to estimate exposure to workplace carcinogens in B.C. They will also identify carcinogens for which there is negligible risk of exposure in B.C. Provincial data from previous studies will then be used to improve estimates, particularly in the industries where there are extensive B.C.-based data — namely, wood products, pulp and paper, agriculture, non-ferrous metals, and health care. In the final phase, the researchers will explore governmental and multipartite data sources and their potential utilization for estimating exposures.

Importance:
It is estimated that between 4 and10 percent of cancer in the general population is work-related. Data from this project can be used to set priorities and guide prevention activities, surveillance efforts, and standards setting; to evaluate the impacts of proposed regulations; to adjudicate claims; to estimate numbers of exposed workers; and to set priorities for further research on occupational cancer in B.C. The results will increase awareness about the magnitude of work-related cancer, as well as the substances that are of greatest concern.

Airway obstruction and hypersensitivity among young workers: a 15-year follow-up of machinist and construction apprentices

Principal investigator:
Dr. Susan Kennedy, University of British Columbia

Purpose:
To examine whether changes in lung function in the first two years of employment put workers at a higher risk of chronic lung disease in later life, and to evaluate the impact of long-term exposure to metalworking fluids on lung health.

Method:
The research team will follow up with subjects of a study conducted 15 years ago on apprentices in four trades in B.C. (machinists, electricians, insulators, and painters). Information will be collected on current and past respiratory symptoms, current lung function, bronchial responsiveness, demographics, and environmental and other risk factors for respiratory disease. To examine the impact of long-term exposure to metalworking fluids, statistical models will be built relating the level of exposure to adverse respiratory outcomes.

Importance:
If the early changes in lung function are found to predict later disease, this will have a significant impact on the prevention of chronic obstructive lung disease and asthma among Canadian workers. The study will also have a major impact on the understanding of the quantitative impact of metalworking fluid exposure — providing needed scientific information for standard setting and targeted prevention strategies.

Protecting health care workers from bloodborne diseases: implementing the EPINet data collection system for blood and body fluid exposure

Principal investigator:
Dr. Philip Bigelow, University of British Columbia

Purpose:
To implement the EPINet system in the Vancouver Island Health Authority (VIHA) and to collect preliminary data on exposure to infectious body fluids among B.C. health care workers.

Method:
The researchers will set up data collection procedures and convert existing VIHA data to the EPINet system. This will allow for comprehensive evaluation of exposures and comparisons within the health authority and with other jurisdictions worldwide who use the EPINet system.

Importance:
Blood and body fluid (BBF) exposure presents a major risk to health care workers, potentially leading to the transmission of bloodborne pathogens such as the Hepatitis B Virus, Hepatitis C Virus, and Human Immunodeficiency Virus. Implementing EPINet is the first step in a program of research to maximize the effectiveness of BBF exposure control plans in hospitals. The results of this project will help hospitals improve their prevention activities.

2001 and 2002 operating grants

The following 21 projects were funded in the WCB Research Secretariat's first two competitions:

Projects in progress

- Cancer and occupational exposure to pentachlorophenol and tetrachlorophenol
- A case-control study to identify agricultural chemicals associated with increased risk of prostate cancer and in vitro screening of their endocrine disruption activities
- The effect of subject awareness in assessing the probability of slip and fall accidents
- Investigating the consequences of work-related injuries among young workers in B.C.
- Long-term impact of western red cedar asthma on work, health, and quality of life
- Occupational risk identification for ovarian cancer
- Parkinson's disease — workplace risk factors and host susceptibility
- A study of cancer risks among nurses in B.C.
- Biomechanics of ankle reconstruction
- Early mobilization of hand fractures
- Expression of EGFR and VEGF in malignant pleural mesothelioma: defining potential therapeutic targets
- A prospective randomized clinical trial comparing arthroscopic subacromial decompression with and without acromioplasty in a population of WCB patients
- Selective nerve root blocks treatment of acute sciatica
- Profiling the mental health and service utilization of workers' compensation claimants
- Workplace injury management — using new technology to deliver physician education
- Lift devices to reduce musculoskeletal injuries among home support workers in B.C. — Stage 2: Field testing
- Shift-work practice in B.C.

Completed projects

- Measuring respiratory health at B.C. workplaces
- Lift devices to reduce musculoskeletal injuries among home support workers in B.C. — Stage 1: Design
- Prevalence, nature, and risks of voice problems in teachers
- EMG-based assessment and classification of low back pain

2003 development grant projects

This was the first year the WCB offered development grant funding, which is designated for smaller projects that will help pave the way for advances in preventing and reducing occupational illness, injury, and disability. In 2003, the WCB awarded more than $360,000 in development grants to 13 projects:

Development of a method for quantifying biomechanical risk factors associated with manual and mechanically-assisted patient handling

Principal investigator:
Dr. Annalee Yassi, University of British Columbia

This project will examine the biomechanical risk factors associated with different ways of repositioning patients in bed. The results will lead to a method for systematically assessing the biomechanical risk factors associated with a broad range of manual and mechanically assisted patient handling techniques. This study is part of a larger, long-term collaborative research program aimed at developing evidence-based guidance for best practices in patient handling.

Examining the cost-benefit of additional staffing in long term care facilities

Principal investigator:
Dr. Annalee Yassi, University of British Columbia

This project will examine whether increased levels of resident-handling staff (licensed practical nurses, care aides, registered nurses, etc.) in long term care facilities contribute to reduced injury rates and associated cost-savings. The findings will be useful for administrators and workers seeking ways to reduce injuries in long term care facilities.

A test re-test reliability study of the hands-free technique and Safety Climate Questionnaire in B.C. operating room nurses

Principal investigators:
Dr. Bernadette Stringer, University of Western Ontario and Dr. Elizabeth Bryce, Vancouver General Hospital

The investigators will evaluate a new questionnaire designed to examine hospitals' health and safety climates and their use of the hands-free technique (HFT) — a safety procedure for operating room workers to reduce their risk of exposure to blood and body fluid during surgery. Past studies show that HFT can reduce the risk of injury and contamination by 60 percent. This project will contribute to future intervention research aimed at identifying the factors that increase hospitals' uptake of HFT.

Post-traumatic stress disorder in hospital emergency room personnel

Principal investigator:
Dr. Lynn Alden, University of British Columbia

Post-traumatic stress disorder (PTSD) is a significant problem for emergency room workers, who repeatedly witness severe injuries and are often required to perform in stressful, life-or-death medical situations. This project will examine PTSD in emergency room workers, including the prevalence of the disorder, contributing workplace factors, treatment, and means of prevention. The findings will be useful for developing prevention programs and treating PTSD in hospital workers.

In vivo measurements of lumbar mechanics from ultrasound imaging

Principal investigator:
Dr. Ted Milner, Simon Fraser University

This project will test the validity and reliability of ultrasound imaging to estimate muscle activation and intervertebral stiffness. The findings will be used to develop a dynamic stability-based model of the lumbar spine, and evaluate the role of different muscle activation patterns and lumbar instability in people with low-back injuries. This project is relevant to developing evidence-based approaches for the treatment and rehabilitation of workers with back injuries.

Tendinosis and tendon regeneration: roles of apoptosis and insulin-like growth factor-I

Principal investigators:
Dr. Vincent Duronio and Dr. Karim Khan, University of British Columbia

Chronic tendon injuries of the upper extremities are very common work-related musculoskeletal disorders, but their cause is not fully understood and treatment is often unsuccessful. This project will determine whether apoptosis — a form of cell death that may reduce the regenerative capacity of tendons — is occurring in chronic tendon injuries. It will also explore whether a new drug, IGF-I, may lead to treatment options targeting tendon regeneration.

Development of a working prototype sling for use with floor and ceiling lifts to be used by the veterinary sector

Principal investigator:
Ms. Nancy Paris-Seeley, British Columbia Institute of Technology

Staff in veterinary clinics are at risk of musculoskeletal injuries because they often have to lift medium to large animals and most do not use assistive lift devices. Two key reasons for this are the lack of a well-designed animal sling and the high cost of lift devices. This project aims to design an effective and affordable sling for use by veterinary staff in lifting, transferring, and repositioning four-legged animals in the 25 to 50 kilogram range. The research findings will lay the foundation for developing an accessible tool to reduce musculoskeletal injuries related to lifting animals.

Elevated jackhammer support

Principal investigator:
Mr. Gordon Thiessen, British Columbia Institute of Technology

The purpose of this project is to design and evaluate an affordable support device for elevated jackhammer use, aimed at reducing injury and over-exertion among construction workers. Once developed, the device will be field tested and evaluated for performance and reduction in muscle fatigue. This project will lead to a tool for reducing musculoskeletal injuries and vibration-related disorders due to jackhammer work.

Shift work, light-at-night, and melatonin: characterizing a new cancer-related occupational exposure

Principal investigator:
Dr. Marilyn Borugian, British Columbia Cancer Agency

Exposure to light-at-night and a resulting disturbance of melatonin secretion is considered a potential risk factor for cancer. This project will examine the relationship between light-at-night exposure and melatonin levels, and will develop ways to estimate light-at-night exposure by looking at the types of shift work performed by workers. The research will help facilitate needed epidemiologic investigation of light-at-night exposure, particularly in sectors where shift work is common, such as health care and manufacturing.

Who works where? Building occupational research capacity in the British Columbia Linked Health Database

Principal investigator:
Dr. Mieke Koehoorn, University of British Columbia

The British Columbia Linked Health Database (BCLHD) is a rich data source, but it does not yet have a way to indicate the employment status or industry of employment of B.C. residents. This project will add these variables into the BCLHD, to enhance its utility for occupational health research. The new variables will allow researchers to use the BCLHD to monitor a variety of health outcomes by industry across B.C., and answer questions about the relationship between work and health over time. The generation of findings from the BCLHD will help guide policies, legislation, and prevention aimed at protecting and promoting the health and safety of B.C. workplaces.

Investigation of occupational exposures to forestry workers from environmental Cryptococcus neoformans var. gattii

Principal investigator:
Dr. Karen Bartlett, University of British Columbia

Cryptococcus neoformans var. gattii (CVG) is a tropical fungus that appeared on Vancouver Island in 1999 — its first occurrence in Canada. Since then, B.C. has had 75 confirmed cases of cryptococcal mycoses, an infectious illness associated with CVG. The fungus is found in trees, including commercially harvested trees in B.C. (Douglas Fir and Alder). This project will examine the trees that may be affected and the health consequences this organism may have for forestry workers in B.C. The results will improve understanding of the extent and risk of CVG exposures in forestry and help guide prevention efforts.

Measuring health outcomes: an empirical comparison of adaptive and standard questionnaires

Principal investigator:
Dr. Jacek Kopec, Arthritis Research Centre of Canada

This project involves developing and evaluating a computerized adaptive questionnaire for measuring health-related quality of life outcomes in patients with back pain. In adaptive questionnaires, questions change based on subjects' responses to previous questions, allowing for a shorter, more tailored format. An adaptive questionnaire could improve measurement of patient outcomes, and facilitate the evaluation of clinical interventions to treat low-back injuries.

An epidemiological approach to evaluating hearing conservation program effectiveness

Principal investigator:
Dr. Hugh Davies, University of British Columbia

The goal of this study is to establish a hearing test database and assess its potential as a tool for evaluating the effectiveness of hearing conservation programs and policy. Using WCB hearing test data and data from a large cohort study of sawmill workers, the researchers will examine the relationship between a variety of factors and assess the risk of hearing loss in the sawmill, logging, building construction, and pulp and paper industries. The researchers will then determine if this approach can be used to examine hearing loss patterns and hearing conservation program effectiveness in other B.C. industry sectors.

2003 research training award recipients

This year, the Research Secretariat introduced research training awards aimed at developing B.C.'s occupational health and safety research capacity by supporting students in graduate level programs. The four award recipients for 2003 come from diverse academic backgrounds, but they all have one thing in common — an interest in research that will help prevent and minimize occupational illness, injury, and disability.

David Du

David Du is pursuing his master's degree in Engineering at the University of British Columbia. His career goal is to become an electrical mechanical engineer because it combines his three passions — electrical engineering, mechanical engineering, and computer science. He plans to draw on these interests to research and develop innovative biomedical assistive devices.

David Du

With a research training award from the WCB, Du is currently developing a cost-effective powered orthotic device for workers who have lost limb function in both arms due to head trauma or spinal cord injury. Du hopes to enable increased movement and independence so that injured workers can perform basic tasks such as eating, drinking, and lifting and moving objects — functions that would significantly improve quality of life for injured workers. The device would also aid rehabilitation and reduce the costs associated with patient care.

"With help from the research training award, I hope to develop a more efficient biomedical device than those currently available," says Du. "I also hope to learn more about mechanical design and robotics to complement my knowledge in electrical engineering and computer science. The research award will provide me with hands-on experience in developing and evaluating an orthotic device prototype, and will also allow me to access the equipment and resources I need for better testing and design outcomes."

Crystal Whitney

Crystal Whitney, a Ph.D. candidate at the University of British Columbia's School of Human Kinetics, has an intense interest in exercise and cardiovascular health. She has worked in health promotion and has a Master of Science in Adult Fitness/ Cardiac Rehabilitation. For her funded research training project, she is exploring the unique occupational demands of firefighting, which could be risk factors for cardiovascular disease, disability, and death.

Crystal Whitney

"The unique nature of firefighters' work can involve a transition from sleep to maximum heart rate in just one minute, which can increase the risk of serious cardiovascular conditions including heart attack," says Whitney. "Factors such as heat stress, cumbersome equipment, environmental toxins, and psychological stress can also lead to increased risk. Traditional training and exercise programs don't address the stress that can be placed on the heart under these circumstances."

Whitney's research is aimed at developing an exercise program that will decrease the risk of heart disease in firefighters. Ideally, firefighters would begin the program before they experience any signs of heart disease. The participants in this study will perform an interval-training program, without warm-up, to mimic the cardiovascular occupational demands of firefighting.

"No one is free from the risk of heart disease," she says. "I hope this research will pave the way to an increased understanding of how to prevent occupational disease and injury."

Mary Heppner

Mary Heppner's career goal is to assist workers with returning to work when they have a disability. She is currently completing her master's degree in Physical Education at the University of Victoria, and through her research, she's discovering some of the attitudes and technologies that affect return-to-work outcomes for workers.

Mary Heppner

"An injury can create a great deal of doubt and confusion," says Heppner. "Injured workers may not understand the effects of their injury or the technology that may enable them to return to work, while employers and occupational therapists may not know what tools and support they can provide to help injured workers return to work."

With funding from the graduate student research training competition, Heppner is focusing on how a worker's self efficacy (confidence in ability to return to work) affects the outcomes of assistive technology used to facilitate return to work. According to Heppner, assistive technology is neither well-utilized nor well-understood in the rehabilitation and compensation fields.

"I'm fascinated by the attitudes both injured people and employers have towards the use of assistive technology in the workplace," she says. "There's a perception that if you want to overcome your injury and return to work, you can just do it, but it's so much more complex than that. Yes, injured workers need to learn how to empower themselves, but employers and occupational therapists need to know how to help injured workers as well."

Heppner hopes her research will generate specific recommendations for increasing successful return-to-work rates among assistive technology users. "Although my focus is on disability and return to work, I believe the principals of good design and assistive technology can be used to make workplaces safer and more efficient for all workers."

Shannon van Wiltenburg

Shannon van Wiltenburg has been a nurse and nurse educator for years. Her experiences have taught her how to recognize and avoid violence in the workplace. Now she's working to enhance her skills and qualifications in nursing education and is undertaking research to prevent new nurses and other health care professionals from becoming victims of violence on the job.

Shannon van Wiltenburg

Van Wiltenburg, who is completing her master's degree at the University of British Columbia's School of Nursing, is using her grant from the Research Secretariat to study nurses' experiences of violence in the workplace.

"Violence towards nurses is increasingly recognized as a serious and frightening workplace hazard," she says. "In fact, growing evidence suggests that nurses experience higher levels of violence compared to other health care workers and other high-risk occupations. Besides physical harm, such violence can result in stress, emotional trauma, depression, and time away from work. But before we can design good interventions, we need to know more about how nurses recognize and experience violence on the job."

Van Wiltenburg hopes her research and her passion for teaching will ultimately contribute to a greater understanding of nurses' work environments, and result in improved understanding of what workplace violence is and how it can be addressed. Although her research focuses primarily on the nursing community, she hopes the results will be useful for people in other health care professions as well.

2003 research training award recipients

This year, the Research Secretariat introduced research training awards aimed at developing B.C.'s occupational health and safety research capacity by supporting students in graduate level programs. The four award recipients for 2003 come from diverse academic backgrounds, but they all have one thing in common — an interest in research that will help prevent and minimize occupational illness, injury, and disability.

David Du

David Du is pursuing his master's degree in Engineering at the University of British Columbia. His career goal is to become an electrical mechanical engineer because it combines his three passions — electrical engineering, mechanical engineering, and computer science. He plans to draw on these interests to research and develop innovative biomedical assistive devices.

David Du

With a research training award from the WCB, Du is currently developing a cost-effective powered orthotic device for workers who have lost limb function in both arms due to head trauma or spinal cord injury. Du hopes to enable increased movement and independence so that injured workers can perform basic tasks such as eating, drinking, and lifting and moving objects — functions that would significantly improve quality of life for injured workers. The device would also aid rehabilitation and reduce the costs associated with patient care.

"With help from the research training award, I hope to develop a more efficient biomedical device than those currently available," says Du. "I also hope to learn more about mechanical design and robotics to complement my knowledge in electrical engineering and computer science. The research award will provide me with hands-on experience in developing and evaluating an orthotic device prototype, and will also allow me to access the equipment and resources I need for better testing and design outcomes."

Crystal Whitney

Crystal Whitney, a Ph.D. candidate at the University of British Columbia's School of Human Kinetics, has an intense interest in exercise and cardiovascular health. She has worked in health promotion and has a Master of Science in Adult Fitness/ Cardiac Rehabilitation. For her funded research training project, she is exploring the unique occupational demands of firefighting, which could be risk factors for cardiovascular disease, disability, and death.

Crystal Whitney

"The unique nature of firefighters' work can involve a transition from sleep to maximum heart rate in just one minute, which can increase the risk of serious cardiovascular conditions including heart attack," says Whitney. "Factors such as heat stress, cumbersome equipment, environmental toxins, and psychological stress can also lead to increased risk. Traditional training and exercise programs don't address the stress that can be placed on the heart under these circumstances."

Whitney's research is aimed at developing an exercise program that will decrease the risk of heart disease in firefighters. Ideally, firefighters would begin the program before they experience any signs of heart disease. The participants in this study will perform an interval-training program, without warm-up, to mimic the cardiovascular occupational demands of firefighting.

"No one is free from the risk of heart disease," she says "I hope this research will pave the way to an increased understanding of how to prevent occupational disease and injury."

Mary Heppner

Mary Heppner's career goal is to assist workers with returning to work when they have a disability. She is currently completing her master's degree in Physical Education at the University of Victoria, and through her research, she's discovering some of the attitudes and technologies that affect return-to-work outcomes for workers.

"An injury can create a great deal of doubt and confusion," says Heppner. "Injured workers may not understand the effects of their injury or the technology that may enable them to return to work, while employers and occupational therapists may not know what tools and support they can provide to help injured workers return to work."

With funding from the graduate student research training competition, Heppner is focusing on how a worker's self efficacy (confidence in ability to return to work) affects the outcomes of assistive technology used to facilitate return to work. According to Heppner, assistive technology is neither well-utilized nor well-understood in the rehabilitation and compensation fields.

"I'm fascinated by the attitudes both injured people and employers have towards the use of assistive technology in the workplace," she says. "There's a perception that if you want to overcome your injury and return to work, you can just do it, but it's so much more complex than that. Yes, injured workers need to learn how to empower themselves, but employers and occupational therapists need to know how to help injured workers as well."

Heppner hopes her research will generate specific recommendations for increasing successful return-to work rates among assistive technology users. "Although my focus is on disability and return to work, I believe the principals of good design and assistive technology can be used to make workplaces safer and more efficient for all workers."

Shannon van Wiltenburg

Shannon van Wiltenburg has been a nurse and nurse educator for years. Her experiences have taught her how to recognize and avoid violence in the workplace. Now she's working to enhance her skills and qualifications in nursing education and is undertaking research to prevent new nurses and other health care professionals from becoming victims of violence on the job.

Van Wiltenburg, who is completing her master's degree at the University of British Columbia's School of Nursing, is using her grant from the Research Secretariat to study nurses' experiences of violence in the workplace.

"Violence towards nurses is increasingly recognized as a serious and frightening workplace hazard," she says. "In fact, growing evidence suggests that nurses experience higher levels of violence compared to other health care workers and other high-risk occupations. Besides physical harm, such violence can result in stress, emotional trauma, depression, and time away from work. But before we can design good interventions, we need to know more about how nurses recognize and experience violence on the job."

Van Wiltenburg hopes her research and her passion for teaching will ultimately contribute to a greater understanding of nurses' work environments, and result in improved understanding of what workplace violence is and how it can be addressed. Although her research focuses primarily on the nursing community, she hopes the results will be useful for people in other health care professions as well.

About the Research Secretariat

The Research Secretariat's mission is to generate new knowledge that will help reduce occupational injury, illness, and disability. We do this by funding high-quality, scientifically credible research on topics that are relevant to the WCB and to the employers and workers of B.C. Our mandate also includes disseminating research results and facilitating the translation of those results into practical applications for improving the health and safety of B.C. workers and workplaces. As the WCB's central point of contact for research and related activities, we also work to enhance research-related communication and knowledge sharing between the WCB, workplace health researchers, occupational health and safety professionals, workers, employers, and other key stakeholders.

Research Advisory Committee

The Research Advisory Committee (RAC) provides advice to the WCB on research priorities, the funding of research projects, and the dissemination of research outcomes.

2000-2003 RAC Members

Employer representatives

Maurice Fernandes
Industrial health & safety officer
Canada Post

Eric Skowronek
Manager, Health and Safety
B.C. Maritime Employers Association

Bud Britton
Director, Health, Safety and Training
Construction Labour Relations Association

Worker representatives

Rod Audia
President, Local 480
United Steelworkers of America

Joe Divitt
Health and safety representative
Canadian Union of Public Employees

Mona Sykes
Occupational health and safety officer
B.C. Government and Service Employees' Union

Chair

Richard Gallagher
Head, Cancer Control Research Program
BC Cancer Agency

WCB representative (ex-officio)

Anya Keefe
Director, Research Secretariat
WCB of B.C.

Review process

Operating and development grant applications are subjected to a rigorous multi-stage review:

Preliminary review — The Research Secretariat reviews each application for completeness and compliance with the competition guidelines.

Peer review — Proposals that pass the Secretariat's preliminary review are then evaluated for scientific excellence by at least two external experts. The reviewers, who are drawn from the international scientific community, are asked to write an evaluation of each proposal and to rank it according to established scientific guidelines and criteria.

Relevance review — Applications that pass scientific review are screened for relevance by a cross-divisional committee of WCB staff and by the Research Advisory Committee (RAC). Members of the cross-divisional committee review the proposals and advise the RAC on how relevant the projects are to the WCB. Members of the RAC then review the proposals, taking into account the peer review comments and the advice of the internal review committee. After their review, the RAC ranks the proposals and makes funding recommendations to the Secretariat.

Based on the RAC's advice, recommendations are brought forward to the WCB's Board of Directors for a decision on funding.

For research training awards, applications are reviewed by an expert peer review committee. Applications are judged on the basis of the quality of the proposed research project, the research training environment, letters of reference, academic standing, and any previous research experience. Recommendations of the peer review committee are brought forward to the RAC for review and discussion.

Research priorities

To ensure that research projects are relevant to the needs of the WCB and our stakeholders, the Research Secretariat has established five research priorities for the competition. Preference for funding is given to research proposals that fall under one or more of the following categories:

1) Occupational disease, injury, and health services — Research focusing on the biological, medical, and health care factors in the causation, prevention, diagnosis, and treatment of work-related injury and disease.

2) Intervention research — Research focusing on the most effective way of using knowledge about occupational injury and disease to intervene with prevention programs.

3) Compensation, disability management, and return-to-work — Research focusing on compensation levels, disability management, and sustained return-to-work for injured or ill workers.

4) Changing nature of work and work environment — Research focusing on the changing nature of work and the work environment (technological, social, demographic, etc.) and its impact on occupational health and safety.

5) Transferring research knowledge to the workplace — Research focusing on the transformation of knowledge into practical, accessible solutions for preventing workplace injury and disease.

Detailed information on the WCB's research priorities can be found on our web site at

www.worksafebc.com/research/research_program/research_priorities/default.asp

2004 funding opportunities

Research competition

The Research Secretariat awards funds through a competitive process, which emphasizes transparency, accountability, relevance to the workplace, and scientific merit. There are three funding streams:

Operating grants — provide support for research projects by individuals or groups of investigators. The research must be scientifically credible and show strong potential to positively impact workplace health and safety and/or the workers' compensation system in B.C.

Development grants — provide funding of up to $30,000 for smaller research projects in earlier stages of development. Examples include novel approaches to health and safety research, feasibility studies, or preparatory work for developing a full proposal.

Research training awards — provide funding to graduate students intending to specialize in research aimed at preventing occupational injury, disease and disability. Awards are available at the master's and doctoral levels.

2004 competition timelines

Application deadline for operating and development grants:

March 15, 2004 (4 p.m. PST)

Application deadline for research training awards:

March 29, 2004 (4 p.m. PST)

Funding Decisions:

Summer 2004

For more information on funding opportunities, competition guidelines, and review criteria, visit the Research Secretariat's web site at www.worksafebc.com/research/.

WCB Research Secretariat

Research Secretariat
Workers' Compensation Board of B.C.
PO Box 5350 Stn Terminal
Vancouver, BC V6B 5L5

Phone: 604 244-6300
(Monday – Friday, 9 a.m. – 5 p.m. PST)
Fax: 604 244-6295
E-mail: resquery@wcb.bc.ca

WorkSafe
WORKERS' COMPENSATION BOARD OF BC

www.WorkSafebc.com